



VARIABLE SPEED MULTI-TURN ACTUATORS

for closed-loop and open-loop control in industrial valve automation



With SAV .2 for open-close duty and SARV .2 for modulating duty, multi-turn actuators, are paired with intelligent ACV .2 actuator controls. The proven AUMA SA/SAR range is enhanced by variable speed models. AUMA are spearheading market technology offering a broad speed control ratio.

Variable speed offers significant advantages. For any change of valve position, the best possible operating speed is adjustable. To optimise this competence, new functions have been integrated into AUMA ACV actuator controls:

Soft start and soft stop

Operations out of an end position start at zero velocity. By means of a ramp function, speed is increased until the predefined setpoint value. Soft stop is the exact opposite: Prior to reaching the end position, the velocity is linearly decreased. The advantage is gentle service for all valve and actuator components subject to wear.

Higher positioning accuracy

Like for operation into the end position, the actuator decreases the operating speed when approaching the setpoint valve position down to zero velocity. This allows for more accurate actuator positioning to the setpoint compared to the sudden tripping of a fixed speed actuator. This ability is particularly crucial for the SARV modulating duty model.

External impact on speed

The variable actuator speed is an additional control variable to optimise a control process within the control system. To this end, the SARV speed can be adjusted by an external input.

Operation profile including up to eight position pivot points.

Speeds can be defined for up to eight positions for each operational direction. Speed increase or decrease prior to reaching these pivot points is also supported using a ramp function. Typically, this function is desired for avoidance of pressure surges when closing valves in pipework.

EMERGENCY operation at predefined speed

EMERGENCY operations are executed at a predefined and frequently high speed to suit the particular event.

Synchronous link

This function characterises total synchronous operation of two actuators in spite of the absence of mechanical links. The actuators have a master - slave relationship. The master device specifies the speed which is in turn adopted by the slave.

TECHNICAL DATA

The following technical data is for reference purpose only. For detailed data, please refer to the separate technical data sheets.

Positioning accuracy

The actuators achieve a positioning accuracy of < 0.2 %.

Type of duty

The type of duty depends on the nominal voltage of the deployed motor.

- > SAV multi-turn actuators for open-close duty
S2 - 15 min or S2 - 30 min
- > SARV multi-turn actuators for modulating duty
S4 - 25 %, S4 - 50 % or S4 - 75 %

Ambient temperatures

> -30 °C to +70 °C

For some actuator sizes, restrictions with regard to the permissible ambient temperature may result from supply voltage, type of duty and torque requirements.

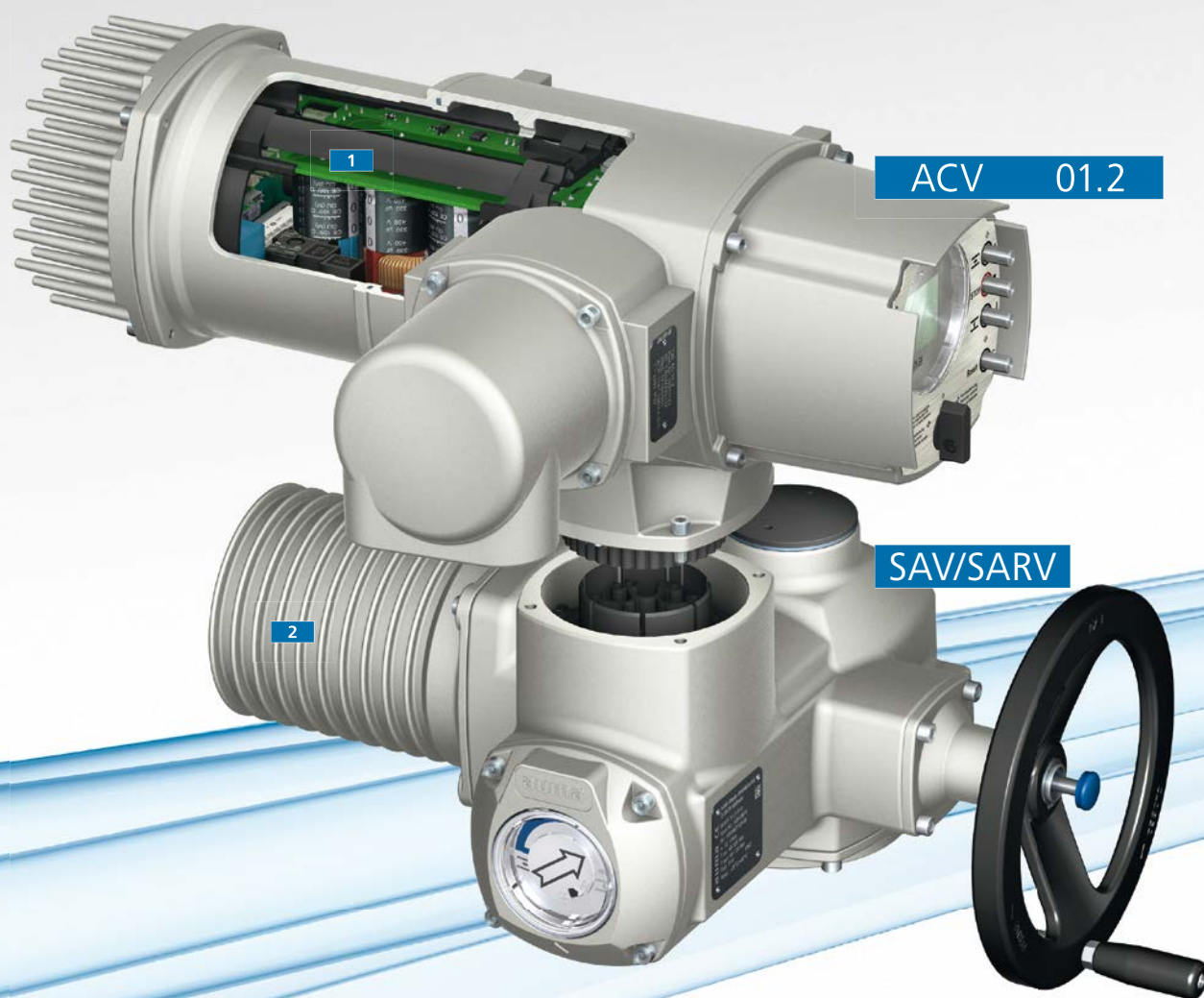
Supply voltages

- > 3-phase AC current 50/60 Hz
maximum mains voltage 480 V
- > 1-phase AC current 50/60 Hz
maximum mains voltage 240 V

The following table applies to actuators with 3-phase AC power supply.

| Type | Speed ranges [rpm] | Setting range for tripping torque [Nm] | Maximum torque for modulating duty [Nm] | Starting frequency for modulating duty max. number of starts [1/h] |
|-------------------------|----------------------------|--|---|--|
| SAV 07.2 | 6 – 60; 12 – 120; 24 – 240 | 15 – 30 | – | – |
| SARV 07.2 | 6 – 60; 12 – 120 | – | 15 | 1,800 |
| SAV 07.6 | 6 – 60; 12 – 120; 24 – 240 | 30 – 60 | – | – |
| SARV 07.6 | 6 – 60; 12 – 120 | – | 30 | 1,800 |
| SAV 10.2 | 6 – 60; 12 – 120; 24 – 240 | 60 – 120 | – | – |
| SARV 10.2 | 6 – 60; 12 – 120 | – | 60 | 1,800 |
| SAV 14.2 | 6 – 60; 12 – 120; 24 – 240 | 120 – 250 | – | – |
| SARV 14.2 | 6 – 60; 12 – 120 | – | 120 | 1,500 |
| SAV 14.6 ¹⁾ | 6 – 60; 12 – 120; 24 – 240 | 250 – 500 | – | – |
| SARV 14.6 ¹⁾ | 6 – 60; 12 – 120 | – | 200 | 1,500 |
| SAV 16.2 ¹⁾ | 6 – 60 | 500 – 1,000 | – | – |
| SARV 16.2 ¹⁾ | 6 – 60 | – | 400 | 1,200 |

1 depending on duty type and torque requirement, limitations possible for max. ambient temperature



AUMA variable speed multi-turn actuators are the combination of SAV/SARV actuators and ACV 01.2 actuator controls. Variable speed is achieved by the integral frequency converter within actuator controls. ACV 01.2 are based on the intelligent AC 01.2 actuator controls. Operation and integration of ACV into the DCS is comparable to AC.

By their design, SAV and SARV do not differ essentially from SA and SAR actuators. The renamed type designation identifies the possibility to pair the actuator with ACV 01.2 actuator controls.

1 Frequency converter

Frequency converters are the perfect choice for providing 3-phase AC motors with variable speed. The converter specially developed by AUMA excels by maintaining constant torque availability across a broad speed range.

The converter ensures that the actuator can be supplied with 1-phase AC voltage in spite of using a 3-phase AC motor. Voltage and frequency fluctuations are compensated by the converter. At the same time, the converter eliminates high start-up currents which are usually generated at actuator start.

2 3-phase AC motor

Irrespective of the type of power supply with 3-phase or 1-phase AC current, the actuator is always equipped with a specially sized 3-phase AC motor. The frequency converter converts the supply voltage applied into an appropriate voltage for the 3-phase AC motor.

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